SECTION 09810--CHEMICAL RESISTANT COATING SYSTEM

PART 1--GENERAL

SUMMARY:

Section Includes: Work includes, but is not limited to:

[CLEARLY DEFINE ALL WORK INCLUDED AND/OR PROVIDE A ROOM FINISH SCHEDULE]

Coat floors, curbs, sumps, and trenches of rooms with chemical resistant coating system.

REFERENCES:

The following documents, including others referenced therein, form part of this Section to the extent designated herein:

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 307	Standard Test Method for Temsile Strength of Chemical-Resistant Mortar, Grouts, and Monolithic Surfacings
ASTM C 413	Standard Test Method for Absorption of Chemical-Resistant Mortar, Grouts, and Monolithic Surfacings
ASTM C 579	Standard Test Methods for Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings and Polymer Concretes
ASTM C 580	Standard Test Method for Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings and Polymer Concretes
ASTM D 635	Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Self Supporting Plastics in a Horizontal Position
ASTM D 648	Standard Test Method for deflection Temperature of Plastics Under Flexural Load
ASTM D 790	Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
ASTM D 1044	Standard Test Method for Resistance of Transparent Plastics to Surface Abrasion
ASTM D 2047	Standard Test Method for Static Coefficient of Friction of Polish-Coated Floor Surfaces as Measured by the James Machine
ASTM D 2240	Standard Test Method for Rubber Property - Durometer Hardness
ASTM D 4541	Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion
ASTM E 831	Standard Test Method for linear Thermal Expansion of Solid Materials by Thermomechanical Analysis

MILITARY SPECIFICATIONS (MIL)

MIL-D-3134J Deck Covering Materials

OCCUPATIONAL HEALTH AND SAFETY ADMINISTRATION (OSHA)

28 CFR 1926.1200 Hazard Communication Standard

STEEL STRUCTURES PAINTING COUNCIL (SSPC)

SUBMITTALS:

Submittals include, but are not limited to the following:

Product Data: Submit product data indicating compliance with the requirements of these specifications, including surface preparation and application instructions.

Qualifications: Submit certification that the Subcontractor meets the requirements of the "Qualifications" article of this Section.

See Section 01300, Submittals and Vendor Data Schedule for additional submittal requirements.

QUALITY CONTROL:

Regulatory Requirements (Codes and Standards): Comply with provisions of the following codes and standards, unless otherwise specified herein:

28 CFR 1926.1200

Qualifications: Subcontractor shall be an established firm regularly engaged in manufacturing and installation of polymer floor systems for the past 10 yrs. Subcontractor shall have completed at least five projects of similar size and complexity.

DELIVERY, STORAGE AND HANDLING:

Material Packaging: All materials used shall be factory pre-weighted and prepackaged in single, easy to manage batches to eliminate on site mixing errors. No on site weighing or volumetric measurements will be allowed.

Material shall be delivered to job site and checked by flooring Subcontractor for completeness and shipping damage prior to job start. Damaged material shall only be used at the discretion of the Contractor's Representative.

Material shall be stored in a dry, enclosed area protected from exposure to moisture. Temperature of storage area shall be maintained between 60° and 90° F.

JOB CONDITIONS:

Concrete substrate shall have cured 30 days utilizing a dissipating curing membrane. Concrete subfloors on or below grade shall be adequately waterproofed beneath and at the perimeter of the slab. Concrete shall have a light broom finish.

Job area shall be free of other trades during, and for a period of 24 hrs, after floor installation.

Protection of finished floor from damage by subsequent trades shall be the responsibility of the Subcontractor.

WARRANTY:

Subcontractor shall furnish a single, written warranty covering material and workmanship for a period of one (1) full year from date of installation.

PART 2--PRODUCTS

MANUFACTURER:

Subject to compliance with requirements, provide one of the following products:

STONCLAD HT Chemical Resistive Coating as manufactured by STONHARD Inc. of Maple Shade, NJ 08052 (1-800-257-7953)

ROCK TRED Concrete Surface Protection of Skokie, IL, 60076 (1-800-762-8733), or approved equal.

MATERIALS:

Material Description: The nominal 1/4 in. (6.35 mm) thick system shall be comprised of a penetrating, moisture tolerant, two-component epoxy primer; and high-performance, three-component mortar consisting of epoxy resin, curing agent and selected, graded aggregates blended with inorganic pigments.

Color: HT-141 Grey Color.

PHYSICAL/CHEMICAL CHARACTERISTICS:

Compressive Strength	11,500 psi after 7 days	(ASTM C 579)
Tensile Strength	1,850 psi	(ASTM C 307)
Flexural Strength	4,500 psi	(ASTM C 580)

Flexural Modulus of Elasticity	1.5×10^6 psi	(ASTM D 790)
Hardness	87-90	(ASTM D 2240/Shore D.Durometer)
Bond Strength	400 psi (100% concrete failure)	(ASTM D 4541)
Indentation	No Indentation	(MIL-D-3134F)
Abrasion Resistance	0.18 gm max. weight loss (ASTM D 1044, Taber Abrader CS-17 wheel, 1,000 gm load, 1,000 cycles)	
Coefficient of Friction	0.6	(ASTM D 2047)
Flammability	Self Extinguishing. Extent of burning 0.25 in. max.	(ASTM D 635)
Thermal Coefficent of Linear Expansion	2.0×10^5 in/in/° F	(ASTM E 831)
Water Absorption	0.2%	(ASTM C 413)
Heat Resistance Limitation	200° F/93° C (for continuous exposure) 250° F/122° C (for intermittent spills)	
Heat Deflection Temperature	125° F/52° C	(ASTM D 648)
Cure Rate (at 77° F/25° C) allow	6 hrs for foot traffic 18 hrs for light traffic 24 hrs for normal operations	

PART 3--EXECUTION

SUBSTRATE PREPARATION:

Surface preparation shall be in strict accordance with the manufacturer's instructions.

SURFACE PRIMING:

All properly prepared substrates shall be primed using appropriate manufacturer's penetrating primers with strict adherence to installation instruction.

MATERIAL INSTALLATION:

Floor installation shall strictly adhere to manufacturer's written instructions and directions.

All trash and debris shall be properly disposed of and arrangements shall be made to remove all unused material from the job site.

MISCELLANEOUS DETAILS:

Chasing: All areas where the installed floor does not abut a vertical surface shall be chased. The chase shall be 3/4 in. wide chiseled to a straight, saw-cut, 1/4-in. depth.

Expansion and Control Joints: Where required, a joint shall be saw-cut after floor installation and filled with manufacturer's flexible epoxy or urethane caulk.

FIELD QUALITY CONTROL:

Surveillance will be performed by the Contractor's Representative to verify compliance of the work to the drawings and specifications.

END OF SECTION 09810

SECTION 09900--PAINTING

PART 1--GENERAL

SUMMARY:

Section Includes: Work includes, but is not limited to:

All interior and exterior building surfaces which are not prefinished, including all metal building structure steel (such as beams, columns, purlins, girts, and accessories).

Paint steel pipe bollards.

Paint interior wall and ceiling surfaces (including masonry and gypsum wallboard).

Paint exposed to view portions of the interior masonry wall.

Paint Doors and Frames.

Paint and label all exposed conduits.

Paint and identify fire protection system piping.

Pre-finished Items: Unless otherwise indicated, do not include field painting when factory-finishing is specified for such items as (but not limited to) pre-finished partition systems, acoustic materials and casework, finished mechanical and electrical equipment including light fixtures, switchgear and distribution cabinets, equipment and cast iron gratings.

Metal surfaces of anodized aluminum, chromium plate, copper, bronze, stainless steel and similar finished materials will not require finish painting, unless otherwise indicated.

Metal Fire Rating Labels: Do not paint over any code-required labels, such as Underwriters' Laboratories and Factory Mutual, or any equipment identification, performance rating, name, or nomenclature plates.

SUBMITTALS:

Submittal include, but are not limited to the following:

Product Data: Submit manufacturers technical information, including paint label analysis and application instructions for each material proposed for use.

Material Safety Data Sheets (MSDS): Submit MSDSs on all products used.

Samples: Submit manufacturers standard color chips for selection by the Contractor. If a non-standard color is required to match an existing color, submit three paint samples on 12-in. square hardboard for approval by the Contractor.

See Section 01300, Submittals and the Vendor Data Schedule for additional submittal requirements.

QUALITY CONTROL:

Applicator Qualifications: Engage an experienced applicator who is regularly engaged in the application and installation of, and has successfully completed, coating system applications similar in material and extent to those in this project.

Single Source Responsibility: Provide primers and undercoat material produced by the same manufacturer as the finish coats and as recommended for the particular substrate and finish coat.

DELIVERY, STORAGE, AND HANDLING:

General: Deliver materials to the job site in the manufacturers original, new, unopened packages and containers bearing the manufacturers name and label, and the following information:

- Name or title of material
- Product description (generic classification or binder type)
- Manufacturers name, stock number and date of manufacture
- Contents by volume, for major pigment and vehicle constituents
- Thinning instructions
- Application instructions
- Color name and number
- Handling instructions and precautions

Storage: Store materials not used in tightly covered containers in a well ventilated area at a minimum ambient temperature of 45• F (7• C). Maintain containers used in storage in a clean condition, free of foreign materials and residue. Volatile liquids and used wiping and cleaning rags shall be kept in tightly closed metal containers. After each days work, empty paint cans and other waste shall be removed from the premises and disposed of as directed by the Contractor. Only one days supply of paint may be brought into the work area. Any extra must be removed from the work area at the end of each day unless otherwise approved by the Contractor. The Subcontractor shall store and handle all paint in a well ventilated area or room.

PART 2--PRODUCTS

MANUFACTURERS:

Subject to compliance with requirements, provide products of one of the following:

Benjamin-Moore
Columbia Paint Company
Devoe and Raynolds Company (ICI)
Fuller-O'Brien (ICI)
The Glidden Company (ICI)
ICI Dulux (ICI)
Ponderosa Paint Company
Pratt and Lambert
Sherwin-Williams Company

MATERIALS:

Paint shall be well ground, shall not settle excessively, cake or thicken in the container; shall be readily broken up with paddle to a smooth consistency and shall show easy brushing properties. Products containing lead or known carcinogens shall not be used. All products used shall comply with VOC requirements.

Solids by volume for latex based coatings shall be not less than 30%. Solids by volume for alkyd based coatings shall not be less than 40%. Solids by volume for wood stains and transparent finishes shall be not less than 20%.

[SPECIFIER CHOOSE APPLICABLE SYSTEMS FROM THE FOLLOWING PAINT SCHEDULE. FOR EXAMPLE, IF STUCCO IS IN THE PROJECT, CHOOSE EITHER SEMI-GLOSS ACRYLIC-ENAMEL FINISH OR FULL-GLOSS ACRYLIC ENAMEL FINISH AND DELETE THE ONE OR ONES NOT CHOSEN. IF DESIRED SYSTEM IS NOT INCLUDED, REFER TO MASTERSPEC FOR ADDITIONAL SYSTEMS.

ACRYLIC-LATEX ENAMELS ARE WATER EMULSION AND PROVIDE EASIER APPLICATION AND CLEAN-UP. ALKYDS ARE OIL BASED AND HAVE GREATER WETTING ABILITY AND ARE MORE SUITABLE FOR POORLY PREPARED SURFACES OR OVER PREVIOUSLY PAINTED, CHALKY SURFACES. ACRYLIC-LATEX ENAMELS HAVE EXCELLENT COLOR RETENTION AND DURABILITY, BUT ARE MORE SURFACE PREP SENSITIVE. ALKYDS ARE BETTER FOR EXTERIOR USE, GENERALLY. ACRYLIC-LATEX ENAMELS ARE SUITABLE FOR BOTH INTERIOR AND EXTERIOR USE. SOME ALKYDS REQUIRE RESPIRATORS FOR INDOOR APPLICATION.]

PAINT SCHEDULE (EXTERIOR):

Concrete, Stucco and Masonry (other than Concrete Masonry Units)

Low Luster Acrylic Finish:
Primer: Alkali-resistant, exterior, acrylic-latex primer.
First and Second Coats: Low luster (eggshell or satin), exterior, acrylic-latex paint.

Semi-Gloss, Acrylic-Enamel Finish:
Primer: Alkali-resistant, exterior, acrylic-latex primer.
First and Second Coats: Semigloss, exterior, acrylic-latex enamel.

Full-Gloss, Acrylic-Enamel Finish:
Primer: Alkali-resistant, exterior, acrylic-latex primer.
First and Second Coats: Full-gloss, exterior, acrylic-latex enamel.

Concrete Masonry Units:

Semi-Gloss, Acrylic-Enamel Finish:
Block Filler: High performance, latex block filler.
First and Second Coats: Semigloss, exterior, acrylic-latex enamel.

Full-Gloss, Acrylic-Enamel Finish:
Block Filler: High performance, latex block filler.
First and Second Coats: Full-gloss, exterior, acrylic-latex enamel.

Wood:

Semi-Gloss, Acrylic-Enamel Finish:
Primer: Exterior, acrylic-latex, primer.
First and Second Coats: Semigloss, waterborne, exterior, acrylic-enamel.

Full-Gloss, Acrylic-Enamel Finish:
Primer: Exterior, alkyd or latex primer.
First and Second Coats: Semigloss, waterborne, exterior, acrylic-enamel.

Full-Gloss, Alkyd-Enamel Finish:
Primer: Exterior, alkyd wood primer.
First and Second Coats: Full-gloss, exterior, alkyd-enamel.

Wood Trim:

Medium-Shade, Semi-Gloss, Acrylic-Enamel Finish:
Primer: Exterior, acrylic-latex primer.
First and Second Coats: Semigloss, waterborne, exterior, acrylic-enamel.

Medium-Shade, Full-Gloss, Alkyd-Enamel Finish:
Primer: Exterior, alkyd wood primer.
First and Second Coats: Medium shade full-gloss, exterior, alkyd-enamel.

Deep-Color, Full-Gloss, Alkyd-Enamel Finish:
Primer: Exterior, alkyd primer.
First and Second Coats: Deep-color, full-gloss, exterior, alkyd-enamel.

Deep-Color, Full-Gloss, Acrylic-Enamel Finish:
Primer: Exterior, alkyd or latex wood primer.
First and Second Coats: Full-gloss, waterborne, exterior, acrylic-latex enamel.

Plywood:

Flat Acrylic Finish:
Primer: Exterior, acrylic-latex primer.
First and Second Coats: Flat, exterior, acrylic-emulsion paint.

Low Luster Acrylic Finish:
Primer: Exterior, acrylic-latex primer.
First and Second Coats: Low-luster (eggshell or satin), exterior, acrylic-latex paint.

Ferrous Metal:

Semi-Gloss, Acrylic-Enamel Finish:
Primer: Rust inhibitive metal primer.
First and Second Coats: Semigloss, exterior, acrylic-latex enamel.

Full-Gloss, Acrylic-Enamel Finish:
Primer: Rust inhibitive metal primer.
First and Second Coats: Full-gloss, exterior, alkyd enamel.

Full-Gloss, Alkyd-Enamel Finish:
Primer: Rust inhibitive metal primer.
First and Second Coats: Full-gloss, exterior, alkyd-enamel.

Deep-Color, Full-Gloss, Alkyd-Enamel Finish:
Primer: Rust inhibitive metal primer.

First and Second Coats: Full-gloss, exterior, alkyd enamel.

Galvanized Metal:

Semi-Gloss, Acrylic-Enamel Finish:
Primer: Galvanized metal primer.
First and Second Coats: Semigloss, exterior, acrylic-latex enamel.

Full-Gloss, Acrylic-Enamel Finish:
Primer: Galvanized metal primer.
First and Second Coats: Full-gloss, acrylic-latex, interior enamel.

Full-Gloss, Alkyd-Enamel Finish:
Primer: Galvanized metal primer.
First and Second Coats: Full-gloss, exterior, alkyd-enamel.

PAINT SCHEDULE (INTERIOR):

Concrete, Stucco and Masonry (other than Concrete Masonry Units):

Semi-Gloss, Odorless Alkyd-Enamel Finish:
Primer: Alkali-resistant, interior, alkyd or latex primer.
First and Second Coats: Semigloss, interior, alkyd enamel.

Concrete Masonry Units:

Semi-Gloss, Acrylic-Enamel Finish:
Block Filler: High performance, latex block filler.
First and Second Coats: Semigloss, interior, acrylic-latex enamel.

Semi-Gloss, Odorless Alkyd-Enamel Finish:
Block Filler: High performance, latex block filler.
Undercoat: Interior alkyd- or latex-based enamel undercoater.
Finish Coat: Semigloss, alkyd, interior enamel.

Wood:

Semi-Gloss, Acrylic-Enamel Finish:

Undercoat: Interior, alkyd- or acrylic-latex based wood undercoater.
First and Second Coats: Semigloss, interior, acrylic-latex enamel.

Full-Gloss, Acrylic-Enamel Finish:

Undercoat: Alkyd- or acrylic-latex, interior wood undercoating.
First and Second Coats: Semigloss, waterborne, exterior, acrylic-enamel.

Semi-Gloss, Odorless Alkyd-Enamel Finish:

Primer: Alkyd- or latex-based interior enamel undercoater.
First and Second Coats: Odorless, semigloss, interior, alkyd enamel.

Full-Gloss, Odorless Alkyd-Enamel Finish:

Undercoat: Alkyd interior enamel undercoater.
First and Second Coats: Full-gloss, interior, alkyd-enamel.

Ferrous Metal:

Semi-Gloss, Acrylic-Enamel Finish: One finish coat over an enamel undercoat and a primer

Primer: Rust inhibitive metal primer.
Undercoat: Alkyd interior enamel undercoat or semi-gloss, acrylic-latex interior enamel.
Finish Coat: Semigloss, acrylic-latex, interior enamel.

Full-Gloss, Acrylic-Enamel Finish:

Primer: Quick-drying, rust inhibitive, alkyd-based or epoxy-metal primer,
First and Second Coats: Full-gloss, interior, acrylic-latex enamel.

Semi-Gloss, Odorless Alkyd-Enamel Finish: One finish coat over an enamel undercoat and a primer.

Primer: Quick-drying, rust inhibitive, alkyd-based or epoxy-metal primer.
Undercoat: Interior, alkyd-enamel undercoat or semigloss, interior alkyd-enamel finish coat.
Finish Coat: Semigloss, alkyd, interior enamel.

Full-Gloss, Odorless Alkyd-Enamel Finish: Two finish coats over an enamel undercoater and a primer.

Primer: Quick-drying, rust-inhibitive, alkyd-based or epoxy-metal primer.

Undercoat: Alkyd interior enamel undercoat or full gloss, interior alkyd-enamel finish coat.
Finish Coat: Full gloss, alkyd, interior enamel.

Galvanized Metal:

Semi-Gloss, Acrylic-Enamel Finish:
Primer: Galvanized metal primer.
First and Second Coats: Semigloss, interior, acrylic-latex enamel.

Full-Gloss, Acrylic-Enamel Finish:
Primer: Galvanized metal primer.
First and Second Coats: Full-gloss, acrylic-latex interior enamel.

Full-Gloss, Odorless Alkyd-Enamel Finish: One finish coat over an enamel undercoater and a primer.
Primer: Galvanized metal primer.
Undercoat: Alkyd, interior enamel undercoat or semigloss, alkyd-enamel finish coat.
Finish Coat: Full-gloss, alkyd, interior enamel.

Gypsum Board:

Low-luster, Acrylic-Enamel Finish:
Primer: Latex-based, interior primer.
First and Second Coats: Low-luster (eggshell or satin), acrylic-latex, interior enamel.

Semi-Gloss, Acrylic-Enamel Finish:
Primer: Latex-based, interior primer.
First and Second Coats: Semigloss, acrylic-latex, interior enamel.

Full-Gloss, Acrylic-Enamel Finish:
Primer: Latex-based, interior primer.
First and Second Coats: Full gloss, acrylic-latex, interior enamel.

Semi-Gloss, Odorless Alkyd-Enamel Finish:
Primer: Latex-based, interior primer.
First and Second Coats: Semigloss, alkyd , interior enamel.

Full-Gloss, Odorless Alkyd-Enamel Finish:
Primer: Alkyd- or latex-based, interior primer.
First and Second Coats: Full-gloss, alkyd, interior enamel.

Colors: Colors, except as specified hereinafter for Piping Identification and Safety Painting, shall be as specified in Color Schedule 09901 and/or as otherwise selected by the Contractor from current color charts or chips submitted by the Subcontractor. The color charts or chips shall be made by the manufacturer of the paint or labels to be used on the work covered herein. If the same colors required are not available in ready mixed paint, the Subcontractor shall prepare special mixes and submit samples of such mixes to the Contractor for approval.

Identification Labels: Identification labels for piping identification shall be Brady "Quik-Labels" as manufactured by the W. H. Brady Company or equal. (Stenciling is acceptable.)

PART 3--EXECUTION

APPLICATION AND WORKMANSHIP:

General: No paint shall be thinned or otherwise altered in any manner other than recommended by the paint manufacturer. All paint shall be applied in strict accordance with the manufacturer's instructions, unless specified otherwise herein.

Number of Coats:

New Work: One coat of primer and two coats of finish paint except as noted otherwise on the drawings or in these specifications.

Existing Work: Two coats of finish paint.

Paint Film Thickness: Dry film thickness of paint films above substrate or existing paint surface shall be as recommended by the paint manufacturer for each coat. However, the accumulated dry film thickness above substrate or existing paint surface shall not be less than 2.5 mils. Dry film thickness on non-magnetic surfaces shall be determined by a wet film gauge. Dry film thickness is the wet film thickness multiplied by the percent of solids by volume of the paint.

Surface Preparation: All surfaces to be painted shall be clean, smooth, dry and free of corrosion. The Subcontractor shall follow the paint manufacturer's recommendations for surface preparation strictly for the particular substrate being painted and shall submit copies of the surface preparation instructions as called for on the Vendor Data Schedule. All hardware, fixtures, fixture plate and similar factory finished items shall be removed or covered in an approved manner before painting is begun. All items shall be replaced and/or uncovered when the painting work is complete. Masonry and concrete surfaces shall be free of mortar splatters, caulking or other foreign matter. Welds that are not prime coated shall be cleaned by wire brushing.

Damaged Prime Coat or Factory Finish: Damaged shop prime or factory finish coats of paint of any material, fabricated steel or equipment to be installed shall be repaired by the Subcontractor. Chipped or scratched areas shall be sanded or wire brushed to bare metal, feathered and spot primed before finish paint is applied. All prime coats on structural steel and miscellaneous metals that have been damaged, or affected by welding during erection, shall be brushed, cleaned and painted with a prime coat after erection, except that painted concealed surfaces shall be painted before erection. The paint for repair of finish painting shall be the same color as the factory finish coat.

Protection: During painting operations, all equipment and materials, flange faces and other machined or finished surfaces, floors, furniture, plumbing and electrical fixtures and construction work, including window and door glass, that is not to be painted, or is factory finished, shall be protected from paint splatter with drop cloths, paper, masking tape or other approved means. Painted surfaces on existing work, not to be painted under this Subcontract, that are damaged as a result of the Subcontractor's operations shall be repaired by the Subcontractor by priming the touch-up as required to match the undamaged surfaces. Remove all oily rags and waste from the building each night. Take every precaution to avoid danger of fire.

Application: Paint shall be applied in such manner as to preclude runs, sagging, brush marks, holidays or other defects in the finished surface. (No spray painting will be allowed within buildings.) Each coat of paint shall have a slightly different shade of color so that each coat will be distinguishable from the preceding coat. No painting shall be done when the ambient temperature is less than 50•F or when the temperature during the drying period is apt to drop below 50•F. In areas of fresh painted surfaces where the temperature has dropped below 45•F during the drying period, the area shall be brought back to or above 45•F and the drying period extended to 48 hours. All paint shall, otherwise, be applied in strict accordance with the paint manufacturer's directions, including use of respirators where required by the manufacturer's instructions.

Cleanup: Upon the completion of the work, the Subcontractor shall remove all surplus materials and rubbish and remove all paint spots from hardware, equipment, floors, glass and walls, etc. He shall remove all excess materials and equipment from the premises and leave the area in a clean and orderly condition.

IDENTIFICATION OF PIPING SYSTEMS:

Definitions: The following piping identification requirements are based on the American Standards Scheme for the Identification of Piping Systems A13.1 with additions as stipulated herein.
Piping systems are defined as conduits for the transport of gases, liquids, and semi-liquids. This excludes systems which are concealed or in covered pipe trenches, but would include piping systems in service tunnels and pits.

Contents of piping systems shall be identified according to color classification, by a solid color band completely encircling pipe, at least 8 in. in length (longer when necessary to accommodate full identification labels and provide 2-in. end border), painted on pipe or pipe covering in every location where identification labels are required. Stencils may be used in lieu of labels. All exposed firewater piping shall be painted as opposed to using intermittent color bands.

Color Classification: Where a question arises as to proper color classification, the Contractor should be consulted. The following list of pipe identifications are those which will be used on this Subcontract:

	Background/Lettering
Water, Fire Protection (Sprinkler heads shall not be painted)	Red/White
Air (pressure in lb/sq. in.)	Blue/White
Water, Potable (cold)	Green/White
Steam (pressure in lb/sq. in.)	Yellow/Black
Condensate	Yellow/Black
Radioactive	Magenta/Black
Electrical Conduit	Orange/Black

Identification Labels: Identification shall be accomplished by use of labels or stenciling. Straight lines of pipe shall be identified at intervals of 20 ft and at least once in each room. Piping shall also be identified at approximately 2 ft from all turns, valves and upstream side of distributional fittings or branches (exception: Piping in service racks). Horizontal piping which runs only in a service rack shall be identified at intervals of 20 ft or at the point it leaves the room. Branch takeoffs from the horizontal runs in service racks to outlet cocks or valves, less than 10 ft in length, shall not be identified if in the same room.

The lettered label, besides identifying the materials in full English text (no abbreviations or codes), shall indicate unusual qualities of the pipe contents, i.e., hot, cold, pressure, in lb/sq. in.

On service piping, either liquids or gas, apply black arrows of same height and with same background color as adjacent identification labels, to indicate direction of flow.

Application: Labels or stencils shall be applied to the pipe so that the lettering is in the most legible position. Lettering size shall be in accordance with standards specified in ASA-A13; however, nearest "Brady Labels" shall be acceptable (see excerpt from American Standard).

Pipes to be marked shall first be wiped clean of dirt, dust, grease and moisture. Apply label over color band, using pressure, so that it lies smooth and flat. Apply a brush coat of clear lacquer after label has been applied to pipe, making sure edges of label are well covered. Stencils may be used in lieu of labels without use of lacquer cover.

Administration Areas Exceptions: Identification stripping and labeling will not be required in administrative areas unless so directed by the Construction Engineer.

Size of Labels

Outside Diameter of Pipe of Covering (in.)	Width of Color Band A (in.)	Size of Legend Letters B (in.)
*1/4 to 2	8	-
3/4 to 1-1/4	8	-
1_ to 2	8	3/4
2-2 to 6	12	1-1/4
8 to 10	24	2_
Over 10	32	3_

(All dimensions are given in inches.)

* See paragraph on small piping for tag requirements.

Small Piping: Where pipe diameters are too small to accept labels, apply background colors and labels (or stenciling) to rigid phenolic "signboards", sized to accommodate Brady labels, and hung with stainless steel bead chain from the piping.

Apply flow arrows to all sizes.

Valves, Etc.: Identify in a manner similar to "small piping".

FIELD QUALITY CONTROL:

Surveillance will be performed by the Contractor's Representative to verify compliance of the work to the drawings and specifications.

END OF SECTION 09900

ATTACHMENT A
09900 PAINTING

Additional Colors:

	Color (Background/Lettering)
Water, Fire Protection	Red/White
Air (Press. in lb/sq. in.)	Blue/White
Freon	Yellow/Black
Nitrogen	Blue/White
Vacuum	Blue/White
Water-Demineralized	Green/White
Water, Potable (chilled)	Green/White
Water, Potable (cold)	Green/White
Water, Potable Condenser Cooling	Green/White
Acetylene	Yellow/Black
Ammonia (liquid)	Yellow/Black
Ammonia (vapor)	Yellow/Black
Carbon Dioxide	Blue/White
Chlorine	Yellow/Black
Fluorine	Yellow/Black
Gas, Natural	Yellow/Black
Hydrogen	Yellow/Black
Methane	Yellow/Black
Nitric Acid	Yellow/Black
Fuel Oil	Yellow/Black
Oxygen	Yellow/Black
Propane	Yellow/Black
Steam (Press. in lb/sq. in.)	Yellow/Black
Water, Potable, Hot	Green/White
Water, Potable, Hot (heating)	Green/White
Gas, Hot-Off (radioactive)	Magenta/Black
Metal Segregation (radioactive) Waste	Magenta/Black
Radioactive Hot Drain	Magenta/Black
Vacuum Hot (radioactive)	Magenta/Black
Water, Process, Hot (radioactive) Waste	Magenta/Black
Electrical Conduit	Orange/Black

SECTION 09910--PAVEMENT MARKINGS

PART 1--GENERAL

SUMMARY:

This item shall consist of the painting of pavement markings on the surfaces of the roadway in accordance with these specifications and as shown on the plans or as directed.

Section Includes: Work includes, but is not limited to:

SUBMITTALS:

See Vendor Data Schedule. The Subcontractor shall furnish a Certificate of Conformance stating that the Paints comply with this specification.

PART 2--PRODUCTS

MATERIALS:

Paint: Paint shall comply with the current Idaho Transportation Department Contract Specification for no-heat, fast dry, white and yellow traffic line paint.

The Subcontractor shall ensure that both white and yellow paints are of the same formulation and composition except for pigments. Suppliers of this traffic striping paint are:

Morton Traffic Markings, 1675 Commercial ST N.E., Salem, OR 97303.

Columbia Paint Coating, N 112 Haven, Spokane, WA 99202.

Glass Beads: Glass beads for traffic line paint shall conform to Federal Specification TT-B-1325, Type I, Gradation A, or AASHTO 247, Type I. Glass beads are only required on highway pavement. Glass beads are not required in parking lots.

Specification for No-Heat, Fast-Dry Traffic Paint, White, and Yellow: Paint shall be free from foreign materials such as dirt, sand, fibers from bags or other material which can clog screens, valves, pumps or equipment used in striping. Paint shall show no evidence of excessive caking, setting, separation, livering, skinning, or corroding of the container upon storage in the bulk tanks or in the sealed container as received. Paint shall be capable of

being applied with the striping equipment (airless system) to give a smooth uniform stripe without the following problems:

Solvent entrapment in the lines
Paint skinning and splattering
Excessive pressure and gun adjustments
Excessive dusting or fogging.

Pigment Composition: Pigments shall be first quality paint grade pigments. Medium chrome yellow pigment for the yellow traffic paint shall contain a minimum of 87% lead chromate meeting the requirements of ASTM D211, Type III. The pigment for the white traffic paint shall contain a minimum of 92% titanium dioxide meeting the requirements of ASTM D476, Types II, III or IV rutile. The inert or filler pigments must be of a type and quality generally recognized as first quality paint grade products, and shall not contribute to setting of the paint in storage, or be so hard as to cause excessive wear of the spray application equipment.

Vehicle Composition: No alkyd, or chlorinated resins, or chlorinated solvents shall be permitted. To ensure compliance a statement of certification shall accompany all qualification samples. Sample must be received with certification of non alkyd or chlorinated resins or solvents. Samples shall be capable of passing Federal Test Method 14 lb 5132. The paint vehicle may be any combination of natural or synthetic resinous materials. The cured paint must be permanently capable of redissolving in fresh paint. This requirement is intended to minimize buildup of paint in the bulk storage tanks and the clogging of pumps and lines with undissolved skins or gelled paint.

Solvents: The bidder shall furnish the name and numbers of the appropriate solvents for the paint, indicating the sources and cost thereof, if Toluene (Toluol) meeting Federal Specification TT-T-548, or an Industrial Grade of Toluene equal to Chevron 51-L cannot be used for paint thinning or cleanup.

Qualitative and Quantitative Requirements:

Characteristic Method	White	Yellow
Consistency at 25°C (Kreb Units)	75-90	75-90
at 10°C (Kreb Units)	95 Max.	95 Max.
Density of Paint (kg/L)	Within ± 0.036 kg/L of qualification sample	
Total Nonvolatile (%)	67 Min.	67 Min.
Pigments Solids (%)	56 Max.	56 Max.

Nonvolatile Vehicle (%)	Within ± 3% of qualification sample	
Contrast Ratio	0.92 Min.	0.92 Min.
Pigment Composition (kg/L)	0.09 kg/L Min. Ti02 Min.	0.09 kg/L PbCr04

Qualitative and Quantitative Requirements (con't):

Characteristic	Method	White	Yellow
Directional Reflectance (%)		86 Min.	55 Min.
Bleeding Ratio		0.90 Min.	0.90 Min.
Storage Stability	Settlement	7.0 Min.	7.0 Min
	Separation	7.0 Min.	7.0 Min
Abrasion Resistance (L)		50L Min.	50L Min.
Flexibility		No Cracking, flaking, or loss of adhesion	
Skinning		No skinning	No skinning
Color		Compare to Chip 37875	Compare to Chip 33538
Vehicle Composition		Cured paint film shall redissolve	
No-Tracking Time (field test)	Not Tested	40-90 Sec.	
Package stability		6 Min.	6 Min.
Yellowness Index		0.100 Max.	Not Tested

No-Tracking Time: The paint shall be applied to smooth asphalt or concrete pavement at a wet film thickness of approximately 15 mils. Application of the glass beads shall be at a rate of 6 lb/gal of paint. The application of paint and beads shall be done with an airless striping truck. Under special circumstances of weather and pavement conditions the paint may be heat applied at a temperature not to exceed 60°C to achieve the specified dry time. Minor

tracking as judged by the Contractor's Representative shall be considered as showing no-tracking, and conforming to the requirement for field dry time.

PART 3--EXECUTION

INSTALLATION:

The paint shall be applied by a spray-type marking machine with automatic controls. The equipment shall provide a uniform film thickness and markings of uniform cross-sections with clear-cut edges. Equipment for glass bead application shall distribute the glass beads uniformly regardless of variation in speed of travel of the distributing equipment. Marking equipment shall be approved by the Contractor's Representative before it is brought on the project. The application of the paint by hand will be permitted only where necessary for proper forming.

FIELD QUALITY CONTROL:

Paint shall be applied only when surfaces are clean and thoroughly dry and when the air temperature is above 40°F. Paint stripes shall be placed with equipment that is capable of producing a straight line. The stripes shall be uniform and free of erratic waves. If the stripes are not satisfactorily applied, work shall be stopped until corrective action is taken. Striping shall not be eradicated by overpainting with black paint.

The width of marking shall be as designated and be within a tolerance of five percent (5%).

No thinning of paint shall be permitted. Paint shall be thoroughly mixed immediately prior to application. Should delays occur during application in which the paint is unagitated for a period greater than 15 minutes, the paint shall be thoroughly agitated until the mixture is homogenous prior to continuance of application. Paint shall be applied at a rate of not less than 1 gallon per 100 sq. ft of surface. Glass beads shall be applied at the rate of 6 lb per gallon of paint used.

All pavement marking activities shall be coordinated with the Contractor's Representative before any activities begin.

All pavement markings shall conform to the current "Manual on Uniform Traffic Control Devices".

Pavement markings shall be as detailed in the plans.

Surveillance will be performed by Contractor's Representative to verify compliance of the work to the drawings and specifications.

END OF SECTION 09910

SECTION 10160-- TOILET PARTITIONS

PART 1--GENERAL

SUMMARY:

Extent of toilet partitions is indicated on drawings.

Section Includes: Work includes, but is not limited to:

Furnish and install floor-supported toilet partitions, urinal screens and shower stall enclosures. Toilet and shower partitions shall include overhead bracing. Furnish and install toilet accessories as shown on the drawings.

Related Sections:

Section 10800, Toilet Accessories, for toilet paper dispensers, grab bars, shelves, etc.

REFERENCES:

The following documents, including others referenced therein, form part of this Section to the extent referenced herein:

INTERNATIONAL CONFERENCE OF BUILDING OFFICIALS (ICBO)

UBC Uniform Building Code

SUBMITTALS:

Submittals include, but are not limited to the following:

Product Data: Submit manufacturer's detailed technical data for materials, fabrication, and installation, including catalog cuts of anchors, hardware, fastenings, and accessories.

Certification: Certify that toilet and shower partitions contain at least 20% recycled material.

Samples: Submit manufacturer's standard color chips for selection by the Subcontractor.

Shop Drawings: Submit shop drawings for fabrication and erection of toilet partition assemblies not fully described on product drawings, templates, and instructions for installation of anchorage devices built into other work.

See Section 01300, Submittals and the Vendor Data Schedule for additional submittal requirements.

QUALITY CONTROL:

Regulatory Requirements (Codes and Standards): Comply with provisions of the following codes and standards, unless otherwise specified herein:

UBC

WARRANTY:

Toilet partitions, shower enclosures, and urinal screens shall be guaranteed against breakage, deformation, discoloration, and stains for 10 years from the date of receipt by the customer. Products found to be defective within that period shall be replaced without charge.

PART 2--PRODUCTS

MANUFACTURERS:

Subject to compliance with requirements, provide products of one of the following:

Santana Products Company

MATERIALS:

General: Provide materials which have been selected for surface flatness and smoothness.

FINISH:

Panels shall have a self-lubricating Plastic-Glaze 280 surface that resists marking with pens, pencils, lipsticks, and other writing or marking implements.

[CHOOSE WHITE OR HAVE SAMPLES SUBMITTED]

Color: [Color shall be white.] [Submit samples for selection by the Contractor.]

Hardware: Furnish hardware conforming to the following material requirements:

Hinges, door latches, door strikes, coat hooks, and all brackets shall be bright-dip anodized aluminum.

Fasteners, pilaster shoes and curtain hooks shall be stainless steel.

Headrail and shower curtain extrusion shall be heavy duty (6060-T6) anti-grip bright-dip anodized aluminum.

Door pulls, door stops and bumper/hooks shall be heavy duty operating hardware and accessories of chromium-plated nonferrous cast alloy ("Zamac").

Furnish hardware for each compartment in partition system, as follows:

Hinges: Manufacturer's standard bright-dip anodized aluminum unit.

Latch and Keeper: Manufacturer's standard surface-mounted latch unit, designed for emergency access, with combination rubber-faced door strike and keeper.

Coat Hook: Manufacturer's standard unit, combination hook and rubber-tipped bumper.

Door Pull: Manufacturer's standard unit.

MANUFACTURED UNITS:

Partitions shall have all edges machined to a radius of 0.25 inches and all sharp corners removed. All dividing panels and doors shall be 55 inches high and mounted 14 inches above the finished floor.

All pilasters shall be 82 inches high and fastened to stainless steel shoes by means of theft-proof stainless steel sex bolts.

FABRICATION:

General: Furnish standard doors, panels, screens, and pilasters fabricated for partition system, unless otherwise indicated. Furnish units with cutouts, drilled holes, and internal reinforcement to receive partition-mounted hardware, accessories, and grab bars, as indicated.

Toilet Partitions, Shower Enclosures and Screens:

Floor-Supported Partitions: Furnish galvanized steel anchorage devices, complete with threaded rods, lock washers, and leveling adjustment nuts at pilasters, to permit structural connection at floor. Furnish shoe at each pilaster to conceal anchorage.

[CHOOSE FLOOR SUPPORTED OR WALL HUNG]

Floor Supported Screens: Furnish pilasters not less than 1 inch in thickness, panels and pilasters of the same construction and finish as toilet partitions. Furnish galvanized steel anchorage devices, complete with threaded rods, lock washers, and leveling adjustment nuts at pilasters, to permit structural connection at floor. Furnish shoe at each pilaster to conceal anchorage.

Wall Hung Screens: Furnish panel units in sizes indicated, of same construction and finish as partition system panels.

FINISHES:

See MATERIALS.

PART 3--EXECUTION

INSTALLATION:

General: Comply with manufacturer's recommended procedures and installation sequence. Install partitions rigid, straight, plumb, and level. Provide clearances of not more than 1/2 in. between pilasters and panels, and not more than 1 in. between panels and walls.

[DELETE THE FOLLOWING IF WALL HUNG PANELS ARE NOT USED]

[Secure panels to walls with not less than two stirrup brackets attached near top and bottom of panel. Locate wall brackets so that holes for wall anchorages occur in masonry or tile joints. Provide blocking for anchorage to stud and drywall walls.] Secure panels to pilasters with not less than two stirrup brackets located to align with stirrup brackets at wall. Secure panels in position with manufacturer's recommended anchoring devices.

Floor-Supported Partitions: Set pilaster units with anchorages having not less than 2 in. penetration into structural floor, unless otherwise recommended by partition manufacturer. Level, plumb, and tighten installation with devices furnished. Hang doors and adjust so that tops of doors are level with tops of pilasters when doors are in closed position.

Doors: Adequately brace handicap doors attached to narrow screens so that screens do not warp, doors sag, and doors return to the fully closed position.

Screens: Attach with concealed anchoring devices, as recommended by manufacturer to suit supporting structure. Set pilaster to provide support and to resist lateral impact.

Accessories: Mount accessories to partition units in accordance with manufacturer's instructions.

FIELD QUALITY CONTROL:

Surveillance will be performed by the Contractor's Representative to verify compliance of the work to the drawings and specifications.

ADJUST AND CLEAN:

Hardware Adjustment: Adjust and lubricate hardware for proper operation. Set hinges on swinging doors to hold open approximately 30° from closed position when unlatched. Set hinges on outswinging doors (and entrance swing doors) to return to fully closed position.

Clean: Clean exposed surfaces of partition systems using materials and methods recommended by manufacturer, and provide protection as necessary to prevent damage during remainder of construction period.

END OF SECTION 10160

SECTION 10260--CORNER GUARDS

PART 1—GENERAL

WORK DESCRIPTION:

WORK INCLUDED: Work includes, but is not limited to:

Providing and installing corner guards to protect all exposed and finished wallboard corners.

SYSTEM DESCRIPTION:

Clear "Lexan" corner guards provide high impact resistance in material which permits the color of the wall to show through. Wings area ¾ ", 1-1/8", 2-1/2" respectively. Installed with screws or brads (included). The CR-3 or 4 is available as a companion wainscoting strip. Colors available in styles CG-17 and 18. 45 and 135 angles available in style CG-18 only.

SUBMITTALS:

No Vendor Data required for this section unless an "or-equal" item is proposed.

PART 2—PRODUCTS

ACCEPTABLE MANUFACTURERS:

Pro-Tek Impact Protection Systems by Pawling Corporation

LG-200 Lexan Corner Guards by Decrovin

Saturn (CG-2163) Universal Guard Systems by American Floor Products Co., Inc.

MATERIALS:

Lexan:

Impact Resistance – 16 ft. lbs./sq. in. (ASTM D256)

Flammability – 94V-2 (UL Bulletin 94)

Approx. Weight/ft. – CG-16-1 oz., CG-17-2 oz., CG-18-4 oz.

Smoke Developed – Under 450 (NB Smoke Chamber)

Lengths – 4 ft., 8 ft.

Installation CG-17 and CG-18 with chrome plated counter sunk screws supplied. CG-16 with brads supplied.

Colors: (132) Clear

PART 3—EXECUTION

INSTALATION/APPLICATION/ERECTION:

Install as per factory instructions.

FIELD QUALITY CONTROL:

Surveillance will be performed by the Contractor's Representative to verify compliance of the work to the drawings and specifications.

END OF SECTION 10260

SECTION 10440--LETTERS

PART 1--GENERAL

SUMMARY:

Provide and install the letters shown on the drawings and as specified in these specifications.

Section Includes: Work includes, but is not limited to:

Installation of building designation as shown on drawings.

SUBMITTALS:

Submittals include, but are not limited to the following:

Product Data: Submit product data including installation instructions.

Warranty: Submit warranty as called for in "Warranty".

See Section 01300, Submittals and the Vendor Data Schedule for additional submittal requirements.

SEQUENCING/SCHEDULING:

Install letters before insulating wall behind them. This will allow fastening of studs through metal panels and nuts behind.

WARRANTY:

Guarantee baked enamel finish for 5 years, against cracking, peeling and discoloration.

PART 2--PRODUCTS

MANUFACTURERS: Subject to compliance with requirements, provide products of one of the following:

Andco Industries Corp., 4615 Sellars Ave., Greensboro, NC 27407
Metal Arts, 410 6th Street SE, PO Box 639, Mandan ND,58554
The Southwell Co., Box 299, San Antonio, TX, 78291-0299,

MATERIALS:

Letter Style: Microgramma Bold.

Material: 1/2 in. plate aluminum.

Letter Size: 24 in. high, 1/2 in. depth.

Copy and Design: As shown on the drawings.

Finish: Baked enamel. Color shall be black.

PART 3--EXECUTION

INSTALLATION/APPLICATION/ERECTION:

Install as per manufacturer's instructions using a concealed fastener method. Letters shall project a 1 1/2 in. from wall panels.

FIELD QUALITY CONTROL:

Surveillance will be performed by the Contractor's Representative to verify compliance of the work to the drawings and specifications.

END OF SECTION 10440